Glottal stop insertion in Scottish Gaelic and contrastive syllabification

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1 Glottal stops and pitch accents in Scottish Gaelic

1.1 Pitch accents in Hebridean Gaelic

Pitch accents in Hebridean Gaelic

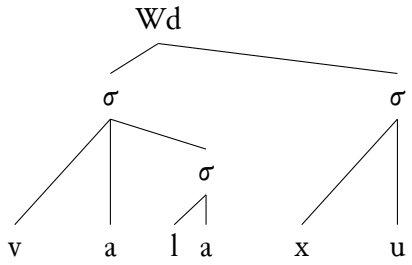
- It is well-known that Hebridean (e. g. Lewis) dialects show a contrast between two types of 'pitch accents'/'word tones' (Borgstrøm 1940; Oftedal 1956; Ladefoged et al. 1998)
- Long rise (late peak)
  - Historical monosyllables: [ˈpoː] 'cow' (OI *bó*)
  - Including svarabhakti words: [ˈpalʸak] 'bellows' (OI *bolg*)
- Rise-fall (early peak)
  - Historical disyllables: [ˈpalʸəx] 'boy'
  - Including hiatus words: [ˈpoː] 'underwater rock' (ON *boði*)

Pitch accents reflect syllabic structure

- Following Ladefoged et al. (1998); Ladefoged (2003), it is possible to analyse the pitch contours as reflecting syllable counts
  - The pitch contours: if the pitch accent is H*+L, the trailing tone can only appear in disyllables (rise-fall), in monosyllables we only see the H* rise
  - Rhyme palatalization: disyllabic plural [ˈpalʸɪç] 'boys' but monosyllabic [ˈpuˠlˠukʲ] 'bellows'
  - Invisibility to syncope: [ˈobəðʲ] 'work', gen. sg. [ˈobrəx] rather than *[ˈobəðʲəx] but [valaxu] rather than *[valxu] 'boys (voc. pl.)'

Pitch accents as synchronic syllable count

- Smith (1999) analyses the svarabhakti vowels in *balg* and *bhalachaibh* with complex prosodic machinery (recursive syllables)



- But they are basically inert
- Proposal: these vowels are absent from *surface* phonological representations

Pitch accents as synchronic syllable counts

- Thus, *balg* is phonologically [palʸk]
  - Explains the tonal contour (Ladefoged et al. 1998)
  - Explains the rhyme palatalization to [puʲʲikʲ]
  - Explains the behaviour with respect to syncope
- Some things need ironing out
  - Dialects like Barra (Borgstrøm 1937; Clements 1986) where the svarabhakti vowel is not always an exact copy (['puʲʲikʲ] *builg*)
  - Historical svarabhakti before deleted segments: ['fala.i] with 'monosyllabic' rising pitch (*falbhaidh* 'will go')
- Still, this analysis makes sense (Oftedal 1956)

1.2 Glottal stops in southern Gaelic

Glottal stops in southern Gaelic

- Much like Danish *stød* corresponds to Norwegian and Swedish pitch accent, in southern Gaelic the Hebridean pitch accents correspond to glottal stop insertion
- Argyll (Holmer 1938; Jones 2000), Tiree (Ternes 1980), see also Ternes (2006); Eliasson (2000)
- Tiree [poʔo] 'underwater rock' (Hebridean ['poː] with rise-fall), ['poː] 'cow' (Hebridean [poː] with rise)

- Smith (1999) suggests that the southern glottal stop is due to a stress-to-weight (Prince 1992; Bye and de Lacy 2008) requirement: if a stressed syllable cannot be bimoraic, insert a glottal stop
- Questions
  - Is GSI a live process? Yes
  - Is Smith (1999) correct? Yes

2 Glottal stop insertion as stress-to-weight

2.1 Glottal stop insertion is phonological

Is GSI phonological?

- A lot of the evidence is static

(1) a. No glottal stop insertion in heavy syllables

(i)	[ˈtʰrɑ$_{\mu}$i$_{\mu}$]	*tràigh*	'shore'
(ii)	[ˈkʰʲu:$_{\mu\mu}$]	*cliù*	'fame'
(iii)	[ˈpjɔ:$_{\mu\mu}$]	*beò*	'alive'

b. Glottal stop insertion is subminimal monosyllables

(i)	[ˈtʰʲe$_{\mu}$ʔ$_{\mu}$]	*teth*	'hot'
(ii)	[ˈmɛ$_{\mu}$ʔ$_{\mu}$]	*math*	'good'
(iii)	[ˈkru$_{\mu}$ʔ$_{\mu}$]	*gruth*	'curds'

- Evidence from alternations shows that at least in some cases it is a live phonological process

Inflection

- Adding inflectional suffixes/clitics leads to open/closed syllable alternations

(2) a. Open syllables, glottal stop inserted

(i)	[ˈkʰu$_{\mu}$ʔ$_{\mu}$.riç mi]	*cuiridh mi*	'I will put'
(ii)	[ˈxu$_{\mu}$ʔ$_{\mu}$.rə tu]	*chuireadh thu*	'you would put'

b. Closed syllables, no glottal stop

(i)	[ˈxu$_{\mu}$r$_{\mu}$ mi]	*chuir mi*	'I put (past)'
(ii)	[ˈxu$_{\mu}$r$_{\mu}$ u]	*chuir thu*	'you put (past)'

Syncope

- Noted by Smith (1999)
- Open/closed syllable alternations due to syncope

(3)	a.	(i)	[ˈtɔ$_{\mu}$ʔ$_{\mu}$.rəs]	*dorus*	‘door’
		(ii)	[ˈtɔ$_{\mu}$r$_{\mu}$.ʃən]	*doirsean*	‘doors’
	b.	(i)	[ˈpɑ$_{\mu}$ʔ$_{\mu}$.l^{j}ə]	*baile*	‘place’
		(ii)	[ˈpɑ$_{\mu}$l$_{\mu}$.t^{j}ən]	*bailtean*	‘places’

Phrase-level resyllabification

- Data from Jura (Jones 2000)
- No GSI in closed syllables as expected

(4) [fɛn lɛm] *fan leam* ‘stay with me’

- Postlexical syllabification takes a normally weight-bearing segment out of the onset

(5)	a.	[ɣɛʔ.n ɑ]	*dh’fhan e*	‘he stayed’
	b.	[stɑʔ.t əŋ kʰɑːr]	*stad an càr*	‘stop the car’
	c.	[koʔ.p ənʲ ɛːn]	*gob an eun*	‘the bird’s beak’

2.2 The glottal stop is a moraic coda

The prosodic affiliation of the glottal stop

- Smith (1999) proposes that glottal stop insertion is triggered by stress-to-weight
- In other words, [ʔ] is a coda
- This is important in cases like [poʔo] *bodha*: VC.V syllabification?
- Argued to be impossible
- VC.V syllabification can be reported by speakers (Ní Chiosáin, Welby, and Espesser 2012)
- But examples of core phonological phenomena involving it are more difficult to find
- I argue that southern Gaelic is an example

The glottal stop and weight-to-stress

- As Smith (1999) observes, the glottal stop appears in open syllables as discussed above
- Tellingly, it does not appear before svarabhakti vowels: [marəv] ‘dead’, consistent with surface-phonological [marv]
- Jones (2000) provides more evidence for the connection with moraicity
- The rule is that there is no GSI in closed syllable is not ‘fully regular’ (*gu léir cunbhalach*) in Jura
- We do get forms like [fɛʔn] ‘stay’ alongside [fɛn]

The connection with fortis sonorants

- According to Jones (2000), word-final [n l r] in forms like [fɛn] are long
- GSI overapplies in closed syllables only before [n l r]
- Obviously, these are the segments participating in the 'fortis' contrast

☞ The GSI overapplication is a type of compensatory lengthening before underlyingly moraic sonorants like lengthening/diphthongization (Ní Chiosáin 1991)

3 Contrastive syllabification in Scottish Gaelic

3.1 Pitch accent and GSI as syllabic structure

Why is this important again?

- If I have convinced you that glottal stop insertion creates moraic codas in light syllables, we are in a position to reconsider [poʔo] 'underwater rock'
- I suggest that the contrast between something like [poʔo] 'underwater rock' (*bodha*) and [poː] 'cow' (*bó*) is underlyingly one of *syllable structure*: /po(o)$_\sigma$/ vs. /poo/
- Syllable structure has been assumed to be completely predictable
- For instance, for McCarthy (2007) syllabification does not introduce a LUM because there are no faithfulness constraints for syllabification

Weight-to-stress or hiatus?

- Returning to [poʔo], how do we know that the glottal stop is not a hiatus-breaker?
- We know that hiatus is repaired by contraction
- Syncope deletes the second syllabic node (even if it stored), triggering contraction

(6)	a.	(i)	[ˈjoʔur]	*leabhar*	'book'
		(ii)	[ˈj*ow*riçən]	*leabhraichean*	'books'
	b.	(i)	[ˈuʔul]	*ubhal*	'apple'
		(ii)	[ˈ*u*ːlən]	*ubhlan*	'apples'

- No explanation for this interaction if the glottal stop has nothing to do with syllabic structure

3.2 Against empty onsets

Stored syllable structure all around

- Clements (1986); Smith (1999) have proposed to derive unusual syllabification effects in Scottish Gaelic by postulating empty onset consonants
- In /po_o/, the empty onset creates an open syllable
- Conceptually, I can't see an objection against empty segments
- However, how do we know they are *onsets*?
- Syllabification is done by the phonology
- Normally, syllabification is driven by sonority (e. g. Zec 1988; Morén 2001; Topintzi 2010)
- But...
  - How sonorous is an empty segment?
  - How do we know that the best prosodification doesn't involve, say, deletion?
- The whole idea stands and falls on the onset status of the empty consonant
- But that's essentially storing a syllabic treelet

Wrapping up

- Glottal stop insertion in southern Scottish Gaelic is driven by constraints on syllabic structure
- The existence of unpredictable glottal stops (and Hebridean pitch accents) shows that syllabic structure is not fully predictable
- Best analysis: assume that syllabic structure can also be stored (cf. Vaux 2003)

☞ After all, we can store

- Foot structure (e. g. lexical stress)
- Moraic structure (lexical vowel length, lexical geminates)
- So why not syllabic structure?

☞ Syllables are not special

References

Borgstrøm, Carl Hjalmar. 1937. 'The dialect of Barra in the Outer Hebrides.' *Norsk tidsskrift for sprogvidenskap* 8:71–242.

———. 1940. *The dialects of the Outer Hebrides.* A linguistic survey of the Gaelic dialects of Scotland 1. Norsk Tidsskrift for Sprogvidenskap, suppl. bind I. Oslo: Norwegian Universities Press.

Bye, Patrik, and Paul de Lacy. 2008. 'Metrical influences on fortition and lenition.' In *Lenition and fortition,* edited by Joaquim Brandão de Carvalho, Tobias Scheer, and Philippe Ségéral, 173–2006. Studies in Generative Grammar 99. Berlin: Mouton de Gruyter.

Clements, G. Nick. 1986. 'Syllabification and epenthesis in the Barra dialect of Gaelic.' In *The phonological representation of suprasegmentals,* edited by John Massie Stuart, Koen Bogers, Harry van der Hulst, and Maarten Mous, 317–336. Berlin: Walter de Gruyter.

Eliasson, Stig. 2000. 'Typologiska och areallingvistiska aspekter på de nordeuropeiska språkens fonologi.' In *Språkkontakt: innverknaden frå nedertysk på andre nordeuropeiske språk,* edited by Ernst Håkon Jahr, 21–70. Nord 2000: 19. København: Nordisk ministerråd.

Holmer, Nils M. 1938. *Studies on Argyllshire Gaelic.* Skrifter utgivna av Kungliga Humanistiska Vetenskapssamfundet i Uppsala 31. Uppsala: Almqvist & Wiksell.

Jones, George. 2000. 'Beagan mu'n stad ghlotasach ann an Gàidhlig Ceann a Deas Earraghaidheil.' *Scottish Gaelic Studies* 20:201–211.

Ladefoged, Peter. 2003. 'Commentary: some thoughts on syllables — an old-fashioned interlude.' In *Papers in laboratory phonology VI,* edited by John Local, Richard Ogden, and Rosalind A. M. Temple, 269–276. Cambridge: Cambridge University Press.

Ladefoged, Peter, Jenny Ladefoged, Alice Turk, Kevin Hind, and St. John Skilton. 1998. 'Phonetic structures of Scottish Gaelic.' *Journal of the International Phonetic Association* 28 (1): 1–41.

McCarthy, John J. 2007. *Hidden generalizations: phonological opacity in Optimality Theory.* Advances in Optimality Theory 1. Equinox.

Morén, Bruce. 2001. *Distinctiveness, coercion, and sonority: a unified theory of weight.* London, New York: Routledge.

Ní Chiosáin, Máire. 1991. 'Topics in the phonology of Irish.' PhD diss., University of Massachusetts, Amherst.

Ní Chiosáin, Máire, Pauline Welby, and Robert Espesser. 2012. 'Is the syllabification of Irish a typological exception? An experimental study.' *Speech Communication* 54 (1): 68–91.

Oftedal, Magne. 1956. *The Gaelic of Leurbost, Isle of Lewis.* A linguistic survey of the Gaelic dialects of Scotland 3. Oslo: W. Aschehoug & Co.

Prince, Alan S. 1992. 'Quantitative consequences of rhythmic organization.' *CLS* 25 (2): 355–398.

Smith, Norval. 1999. 'A preliminary account of some aspects of Leurbost Gaelic syllable structure.' In *The syllable: views and facts,* edited by Harry van der Hulst and Nancy Ritter, 577–630. Studies in Generative Grammar 45. Berlin: Mouton de Gruyter.

Ternes, Elmar. 1980. 'Scottish Gaelic phonemics viewed in a typological perspective.' *Lingua* 52 (1–2): 73–88.

———. 2006. *The phonemic analysis of Scottish Gaelic, based on the dialect of Applecross, Ross-shire*. 3rd revised. Dublin: Dublin Institute for Advanced Studies.

Topintzi, Nina. 2010. *Onsets*. Cambridge: Cambridge University Press.

Vaux, Bert. 2003. 'Syllabification in Armenian, Universal Grammar and the lexicon.' *Linguistic Inquiry* 34 (1): 91–125.

Zec, Draga. 1988. 'Sonority constraints on prosodic structure.' PhD diss., Stanford University.